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ABSTRACT

The third of three related reports, this document contains revised materials for the second and third phases of a study designed to identify teaching processes that are efficient in helping secondary school students learn to read. The materials in the document include an updated report of the effects of the teacher training workshops offered in the second phase of the study on teacher behavior, updated tables of data, revised text from the analysis and results of the third phase of the study, and a revised appendix of the first and second phase observation variables. (HTH)

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HOW TO CHANGE THE PROCESS OF TEACHING BASIC READING SKILLS IN SECONDARY SCHOOLS

PHASE II AND PHASE III

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Final Report - Revised Materials

February 1980

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Attached are revised materials to be inserted into the report, How to Change the Process of Teaching Basic Reading Skills in Secondary Schools, Phase II and Phase III. These corrections do not alter the conclusions in the report. The following are the pages included:

Section VII . . . . . 7-1 through 7-14
Table 14 8-6
Table 23 9-7
Table 30 13-4
Text 13-3, 5, 14
Appendix E E-3
Table F-1 . . . . . F-4

VII EFFECT OF PHASE II WORKSHOPS ON TEACHER BEHAVIOR

Once the workshops were delivered and the pretest and posttest data were collected the $100,000 question was: Did the workshops make a difference in how the teachers performed in their classrooms?

Mean frequencies for each variable used on the profiles were computed for the control and treatment groups. A report of how each group performed on critical variables is displayed on Tables 7, 8, 9 and 10. Each group is compared with a grand mean. The grand mean was derived from 43 classrooms observed in spring in Phase I and 44* classrooms in spring, Phase II. (See Appendix E.) This mean reflects the frequency or percentage of the behaviors occurring in classrooms that were correlated with student gain. Our recommendation to teachers in fall, Phase II was to increase or decrease a particular behavior so that it was above or below the spring, Phase I mean depending on whether the variable was positively or negatively correlated with gain.† In some cases the teachers were already performing the activity in an effective manner so the recommendation was to continue the activity as they were doing. If the treatment or control group of teachers was performing above or below the mean as recommended on a variable, they were given one point. (This is shown on Tables 7, 8, 9 and 10 in terms of a plus.) In this manner an implementation score was developed for each group. Five Minute Interaction variables (F) are reported in terms of frequency of occurrence during 300 interactions recorded per class period. Snapshot variables (S) are reported in terms of percentage of time observed during 5 snapshots per class period. This is a descriptive analysis wherein trends and meaningful differences are examined, rather than a statistical analysis.

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*Two classrooms did not have a complete data set and were dropped from the analysis.

†Recommendations were based upon spring, Phase I but evaluation was based upon the grand mean.

Interactive Instruction

As previously stated, we encouraged teachers to decrease time taken to make assignments and to increase instruction time. This instruction time variable is a composite that includes instruction using any materials as well as discussions and drill and practice activities. This total instruction time (S6, 7, and 8) was observed to have increased slightly for the treatment group from 13% to 15%. The control group went from 11% in the fall to 8% in the spring. The instruction interactions (F45) stayed above the mean for the treatment group but steadily declined for the control group (see Table 7).

An instructional method includes the presentation of new material and what the teacher does after giving instruction or presenting the new material. This procedure varies. We encouraged asking short direct questions and giving immediate supportive feedback to the student's response. Students who have a long history of failure need consistent support and many opportunities to experience success. The number of questions treatment teachers ask about reading (F17) and the students' response rate (F25÷F17) decreased slightly toward spring but remained above the mean. Out of an average of 31 questions teachers asked per period in the spring, students responded an average of 29 times. We encouraged the teachers to distribute the questions among the students, choosing questions each student could most likely answer. We discouraged calling on volunteers since the same students are likely to always respond and get the feedback. Data from Table 7 (F136) indicates that teachers in the treatment group called on different students 23 times in the spring (a little less than in the fall). However, out of the 31 questions asked, a different student was asked 23 times. Note that all of these variables are above the grand mean in the treatment group and below the mean in the control group.

When a teacher continues to question one student, it may indicate the student gave an incorrect response and the teacher was asking probing questions (F110). This is a supportive kind of feedback that is low in frequency but was related to student gain in Phase I. It

Table 7

INTERACTIVE INSTRUCTION

		Spring Grand Mean	More or Less *	Treatment Teachers (N=25)				Control Teachers (N=19)			
				Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
S6, 7,8	Instruction activities	12%	More	+	13%	15%	15%	0	11%	9%	8%
F45	Instruction interactions	54.3	More	+	66.3	44.3	58.3	0	53.6	50.0	44.4
F17	Teacher questions: reading	31.1	More	+	37.2	33.0	31.7	0	40.2	33.9	25.8
F25	Student response: reading	28.8	More	+	33.3	29.0	29.1	0	34.8	29.2	25.3
F71	Praise/support reading or task	12.9	More	+	12.6	13.8	15.2	0	13.4	12.4	11.6
F76	Corrective feedback: reading	12.7	More	+	10.4	10.8	13.0	0	16.6	12.1	12.4
F110	Probing questions	.41	More	+	1.3	2.2	3.0	+	2.8	1.5	2.0
F136	Teacher interacts: different student	21.9	More	+	26.0	20.9	23.1	0	25.8	21.0	21.9
S10	Tests or quizzes	1.2%	More	0	.2%	1.8%	1.4%	+	.4%	.8%	1.7%
F43	Students reading aloud	17.3	More	0	10.7	13.8	13.8	0	14.4	13.7	16.1
S4	Reading aloud activity	5.8	More	0	3.9%	1.9%	2.3%	0	3.4%	5.1%	5.7%
F94	All interactions: reading	202.1	More	+	218.7	208.0	199.0	0	244.1	209.0	181.7
				Total + 9				Total + 2			

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables - frequency out of 300 interactions.
*More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

more than doubled in the treatment group while decreasing in the control group. The message from the teacher to the student in this variable is: The answer isn't right but I think you (the student) can get it, if I (the teacher) ask the question differently. The main idea is to assist students to respond correctly so that positive supportive praise or acknowledgement can be given. There was a positive correlation between praise and support with achievement gain and attendance rate in Phase I. The treatment teachers did increase the frequency of offering praise and acknowledgement (F71) and corrective feedback (F76, F110), while the control teachers declined on these variables.

In order to give students a daily opportunity to succeed we suggested giving short quizzes (5-10 items) that could be scored easily. The quizzes should be designed to allow the students to succeed at a rate of 80-100%. Students who have seldom received 100% need chances to succeed on this level. Success becomes a motivating factor for students who have stopped trying. Although there was a considerable increase in the number of quizzes (S10) being given in both the treatment and control groups from fall to spring, the number of quizzes observed in the treatment group in the spring was still fewer than was the grand mean.

In addition to the instruction of how to teach new material through drill and practice and positive support, we suggested that the teachers have the students in the low reading groups read aloud. Hearing as well as seeing the words is helpful to these students. Many teachers were reluctant to try this since they felt the students would be embarrassed. One teacher who had been teaching 29 years tried grouping and having students read aloud. He reported that he and the students enjoyed the process--"it seemed to break the monotony." Table 7 indicates that although the treatment did increase the number of reading aloud (F43) interactions, they were still lower than the grand mean. The percent of time (S4) went down slightly. This was a disappointment but we conclude it is difficult to get teachers to try something they have opinions against and haven't experienced previously.

The reading interactions comprise two-thirds of the 300 interactions recorded for the treatment groups (F94). We would have preferred to see

this increase rather than decrease, but it is higher for treatment teachers than the control group although the control group started higher in the fall. One explanation for the lower number of reading interactions in the treatment groups may be that the number of interactions centering on other subject areas--current events, social studies, science--increased in the spring. These interactions are coded as task oriented when subject matter other than reading is discussed.

On eight of the twelve interactive instruction variables the treatment group is above the grand mean and the control group. Although the reading aloud variable was not increased to the degree we might hope, we conclude this part of the treatment was effective.

Non-Interactive Instruction

In Phase I, the data suggested that more gain was achieved in classrooms where there was more interactive instruction and where several activities occurred during one period. The no-gain classrooms in Phase I tended to have a high rate of written assignments and silent reading and not much interaction with the students. Thus we recommended a reasonable balance between these activities: encouraging more reading aloud, more discussion and reviewing, less silent reading, and fewer written assignments. The snapshot variables on Table 8 indicate that both groups were above the grand mean on silent reading (S3) in the spring. Time spent on written assignments (S9) decreased for the treatment group and stayed about the same for the control group.

In classrooms where there were high rates of silent reading and written assignments we found there were also high rates of teachers doing tasks like grading papers or making lesson plans during class. To change this pattern we encouraged teachers (especially those with students in the low or medium groups) to stay involved with the students and cautioned them not to grade papers, prepare lessons, etc. during class. Results indicate that on variables describing situations where teachers are not involved with students (S2 and F122), the treatment teachers increased but were below the grand mean. The control teachers increased this behavior to considerably above the mean. By springtime, control

Table 8

NON-INTERACTIVE INSTRUCTION

		Spring Grand Mean	More or Less *	Treatment Teachers (N=25)				Control Teachers (N=19)			
				Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
S3	Silent reading	13.8%	Less	0	15%	13%	16%	0	11%	12%	15%
S9	Written assignments	20.9%	Less	+	24%	24%	18%	0	24%	26%	23%
F122	Teacher without students	41.0	Less	+	17	25	36	0	24	36	47
S2	Teacher: manager--no students	27.8	Less	+	21%	24%	22%	0	21%	26%	29%
			Total	+ 3				Total	+ 0		

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables--frequency out of 300 interactions.
* More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

teachers were not involved with students 29% of the time when the snapshots were recorded. The treatment group was lower than the grand mean and the control group on three of the four non-interactive instruction variables.

Off-Task Activities

In other research on teaching (Evertson, Anderson and Brophy, 1978; Stallings and Kaskowitz, 1974; and Good, 1978), the variable most often found to be related to achievement gain is the time students spend on task. In secondary classrooms where the reading period is likely to be only 45 minutes, it is of utmost importance to reduce the off-task behavior and increase the on-task behavior. The most striking difference we found in Phase I between the no-gain classrooms and the gain classrooms was in the amount of time teachers spent talking about behavior, the number of social comments, and students or teachers not involved in the process of reading. Thus, in the workshops we focused a considerable effort on techniques for reducing off-task behavior and increasing task behavior. Table 9 suggests the workshops had an effect. In Variable F56, Social comments, the treatment group dropped in the winter and increased slightly in the spring, but overall was lower than the grand mean. The control group started slightly lower in the fall and increased in winter and increased dramatically in the spring. Given teenagers and springtime, the increase is not surprising, but the treatment group teachers were able to hold the socializing down.

The treatment teachers' comments on students' behaviors (F96) were reduced by one-third. In the fall the treatment teachers made an average of 9.6 statements about behavior out of 300 statements during the class period and by the spring this had dropped to 5.9. The control teachers started at 6.7 and increased slightly to 7.5.

Students' non-involvement in tasks (S-12, S-13) increased in the treatment group, but remained below the grand mean of 11%. The control group increased from 5% to nearly 14% in the spring. This means that when

Table 9

OFF-TASK ACTIVITIES

		Spring Grand Mean	More or Less*	Treatment teachers (N=25)				Control Teachers (N=19)			
				Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
F56	Social comments	5.3	Less	+	2.2	1.9	2.9	0	1.5	2.6	8.1
F96	Interactions: behavior	8.4	Less	+	9.6	5.7	5.9	+	6.7	7.6	7.5
S12,13	Students uninvolved in tasks	11.4%	Less	+	4.5%	5.3%	9.1%	0	5.1%	4.7%	13.9%
F135	Class intrusions	2.6	Less	+	2.7	3.1	2.1	0	2.6	2.4	3.3
				Total + 4				Total + 1			

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables--frequency out of 300 interactions.
*More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

7-8

Rev. 2/80

the spring observations were made some student or students were either chatting or not involved in any activity (i.e., staring out of the window) 14% of the time.

Other events that take teachers and students off task are intrusions from outside the class. There are many reasons why people enter the classroom and stop the activities: collecting absence data, taking students from class for meetings, school announcements, class photos, purchasing tickets, etc. Phase I data revealed a negative relationship between outside intruders and student gain. Limiting the number of intrusions into the teachers' instructional time is a school level issue which teachers cannot control. While we made teachers aware of the finding regarding intrusions, there was little they could do about it. However, the rate of intrusions in treatment classes diminished slightly in the spring and increased for the control group (F135).

Organization and Grouping

The time spent in organizing and managing the classroom is time spent off the task of teaching reading. However, it is of utmost importance that the classroom is well organized; otherwise it will not function smoothly.

In our Phase I study, we found that in all three gains groups the teacher spent less time making assignments and more time instructing the students than did the teachers of no-gain classes. Thus, we encouraged the treatment teachers in Phase II to be efficient when making assignments: e.g., write assignments on the chalkboard before the class arrives, or have the class assignments for the week on a ditto sheet in student folders. By all means let the students know what to do when they finish an assignment. The message was, have a known agenda from the moment a students walks in the room until the period ends.

The observation data indicate that the percentage of time spent making assignments (S5) went down slightly for the treatment group and stayed the same for the control group (see Table 10). The number of interactions about assignments and organization (F120) increased somewhat for the treatment group but remained below the grand mean. The control group increased by 20 interactions from fall to spring. The number of student comments about assignments (F108) decreased for the treatment group and increased for the control group.

Data shown in Table 10 indicate that a high percentage of observed time was spent by teacher and students in management activities, i.e., passing books, collecting papers, grading papers (S2 and S15). These activities decreased for the treatment group and increased for the control group in the spring.

How the teacher organizes the classroom to keep students on task will make a difference in how well the on-task objective is accomplished. Research findings in Phase I indicate that teachers who move around the classroom monitoring students' work had more students gain than did teachers who allowed students to move around the room coming to the teacher for help. We encouraged our teachers to do the moving around. The treatment teachers held this behavior constant and were above the grand mean (F91) while the control teachers decreased this behavior by 50%.

Many of the classrooms had children with different reading abilities, so we encouraged the teachers to group the students by ability. Given the findings mentioned in Section I that working with one student at a time is an inefficient way to distribute the teacher's time, we recommended that teachers cut down the amount of time spent with one student and increase the time they spent working with a group. Students learn from each other in groups because the instruction time with the teacher is increased. Rather than 2 minutes of individual time they may have 12 minutes of group time with the teacher.

Table 10

ORGANIZATION AND GROUPING

		Grand Mean	More or Less*	Treatment Teachers (N=25)				Control Teachers (N=19)			
				Treatment Group Implementation Score	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$	Control Group Implementation	Fall $\bar{X}$	Winter $\bar{X}$	Spring $\bar{X}$
S5	Making assignments	4.5%	Less	+	5%	5%	3%	0	5%	4%	5%
F120	Interactions: assignments and organization	61.9	Less	+	50.7	55.0	58.1	0	57.7	78.9	78.5
F108	Student comments: assignments	8.7	Less	+	7.2	6.3	4.7	+	6.0	9.7	8.5
S2,15	Total class management	30.1%	Less	+	26%	26%	24%	0	24%	31%	31%
F91	Teacher movement	15.8	More	+	20.1	22.7	19.6	0	25.9	15.1	12.5
F48	Teacher instructs group	4.4	More	+	5.0	7.3	7.2	0	1.7	4.8	2.4
F5	Teacher individual student	78.7	Less	+	91.4	82.6	70.8	+	89.0	77.0	73.3
S119	Teacher with individual	25.0%	Less	0	23%	-	26%	+	24%	-	23%
S120	Teacher with group	16.6%	More	+	13%	-	17%	0	20%	-	16%
S121	Teacher with total class	24%	More	+	30%	-	26%	0	26%	-	22%
F105	Offer student choices	.11	Less	0	.17	.05	.16	+	.05	.12	.14
				Total + 9				Total + 4			

S = Snapshot variables on percentage of time observed.
F = Five minute interaction variables--frequency out of 300 interactions.
*More = treatment teachers were directed to do more of these activities than the grand mean.
Less = treatment teachers were directed to do less of these activities than the grand mean.

The data on Table 10 indicate that speaking to groups (F48) increased slightly and working with individuals (F5) decreased in the treatment group: there were an average of 20 fewer interactions per period with individuals in the spring than in the fall. There still were many more interactions with one person than there were with groups. Teachers working with groups (S120) increased from fall to spring in the treatment group. When working with a group teachers are most likely to ask one student at a time to answer a question so that interactions with individuals will be recorded even if the individual is within a small group. This may help explain the much higher rate of speaking to individuals (S119) rather than to groups.

Data for spring in the treatment group shows that 4% more time was spent with groups (S120). Less time was spent with the total class (S121) but it still was above the grand mean. Counter to our suggestion, slightly more time was spent with individual students (S119). The amount of time control teachers spent with one student remained approximately the same throughout the year. The control group started in the fall by spending 7% more time with groups (S120) than did the treatment group, and this decreased somewhat in the spring. Learning to work with groups is a difficult organizational challenge for most high school teachers. Secondary teachers have not been trained to orchestrate and plan for several groups to function at the same time. Those teachers who formerly had been elementary teachers found this recommendation easier to carry out than did teachers trained only to teach in secondary classrooms. More teachers in the control group had been trained as elementary teachers, explaining in part their higher fall scores for grouping.

To encourage teachers to be in strict control of their classrooms, we suggested that they keep the number of choices students make at a minimum. Much time can be wasted while students decide whether they want to do this or that. We found students were rarely allowed to make choices in either group--fall or spring (F105). The grand mean was only .11. Thus, we think this variable has little impact on student gain and is a small part of a larger picture.

Teacher Self Ratings

The teachers rated themselves on a scale of structure and flexibility in the fall before training and again in the spring after training. Table 11 shows the change for both groups. Clearly the treatment group's change is toward structure while the control group is virtually unchanged. An analysis of variance indicated a statistical difference between the two groups. Given that much of the training was focused upon getting students on task and staying there, this change in attitude is not surprising.

Table 11

TEACHERS' RESPONSES TO STRUCTURE/FLEXIBILITY SCALE

	Treatment		Control	
	x	SD	x	SD
Fall	28.47	6.48	29.25	4.65
Spring	33.00	7.25	-28.81	5.48
Difference	4.53		- .44	
2-Tail probability	p > .001			

Summary

Overall we consider that the treatment teachers were implementing the training program. While the differences between the treatment teachers, the control teachers and the grand mean is not great in some cases, the trend is clear. Out of 31 variables the treatment teachers performed as recommended in relationship to the grand mean on 24 of them. The control teachers implemented only seven of the variables.

Two variables of real consequence for student gain describe reading aloud. These variables started at a low frequency for treatment teachers and did not increase to the mean. We would like to see reading aloud increase and the teachers working more often with groups of students and less often with individuals. Also less time should be allocated to silent reading. We consider the training for these behaviors should be improved. The other variables that were not implemented, quizzes and offers students choices, were of very low frequency and of lesser importance to the training program.

Table 14

PARTIAL CORRELATION OF
READING CTBS SCORES AND PROCESS VARIABLES

		Phase I (N=36)		Phase II (N=29)	
	On-Task/Instruction	r	p	r	p
S7	Discussion/review	.40	.001	.63	.001
S51	Discussion and review: workbooks	.41	.001	.49	.001
S8	Drill and practice	-	-	.38	.01
F43	Student reading aloud	.59	.001	.28	.05
F3	Student initiated questions/comments	-.22	.10	.32	.01
F16	Adult commands, requests, and direct question to students, task or reading			.35	.05
F24	Student responses to an adult, task or reading			.33	.05
F71	Praise and support, task or reading			.54	.001
F72	All praise and support	.25	.05	.19	.15*
F114	Student refusal to respond, adult encourages student	-	-	.28	.05
F110	Student says "I don't know," teacher probes	.52	.001	-	-
F113	Student answers wrong: teacher skips to another student	-.21	.10	-	-
F92	Teacher listening to a student	-	-	.42	.01
	Teacher not Involved with Students				
S2	Teacher without students: management tasks	-.24	.05	-.30	.05
F90	Adult not interacting with students	-.23	.05	-.40	.01
S81	Student silent reading: workbook	-.30	.05	-.48	.001
S3	Teachers and students silent reading	-.20	.10	-.44	.001
S108	Student doing written assignment: workbook, worksheet, paper	-	-	-.41	.01
F135	Teacher interacts with outside intruder	-.25	.05	-	-
	Off-Task				
F123	Interaction: organization	-.34	.05	-.27	.05
F105	Adult offering students a choice of materials or activities	-.33	.02	-.31	.05
F102	Negative interactions	-.29	.05	-	-
F12	Social interaction	-.52	.001	-.30	.05

*These may be considered to be trends.

S = Snapshot of activities variables

F = Five minute interaction variables

Table 23

MEANS AND STANDARD DEVIATIONS
FOR GROUP I—LOW PRETEST/HIGH GAIN AND GROUP IV NO GAIN

Variable Number	On-Task/Instruction	Group I Low Pretest/High Gain $\bar{X}$ Phase I (N=4)	Group I Low Pretest/High Gain $\bar{X}$ Phase II (N=4)	Group IV No Gain $\bar{X}$ Phase I (N=7)	Group IV No Gain $\bar{X}$ Phase II (N=8)
S4	Total for activity: reading aloud	8.54	21.23*	2.94	1.32
F43	Student reading aloud	40.33*	49.50*	20.19	2.00
S5	Total for activity: instruction	12.21	16.41	8.76	10.53
S7	Total for activity: discussion	5.61*	11.58*	1.34	.59
F5	All adult to individual students, verbal	64.50*	69.33	96.10	64.20
F6	All adult to groups of students, verbal	18.50*	8.83	11.00	25.75
F7	All adult to entire class, verbal	87.00*	39.92	38.29	36.58
F70	Adult praise and support, reading	7.00*	19.32*	2.03	11.41
F76	All adult corrective feedback, task or reading	9.00	17.83*	12.52	11.79
F94	All classroom interactions, reading	221.00	222.00	213.10	196.00
F95	All classroom interactions, task	9.67	11.92	5.43	3.50
	Teacher not Involved with Students				
S3	Total for activity: reading silently	3.73	9.38*	2.28	21.44
S9	Total for activity: written assignments	4.84*	3.48*	22.16	27.82
F90	All adult non-interacting with students	14.32*	16.87*	60.01*	50.83*
S2	Teacher without students on classroom management	1.17*	11.67*	6.71*	22.68*
	Off-Task				
F56	All social comments	3.01*	2.08	10.30	7.50
F96	All classroom interactions, behavior	6.00*	7.83	21.00	6.25
F123	All interactions involved organization or assignments	-	39.66*	-	68.16

S = Snapshot variables: percentage of time occurring during observations.

F = Five minute interaction variables: frequency of occurrence per 300 interactions.

$\bar{X}$ = The mean of the variable, or the average frequency of occurrence of the variable for each group.

*Statistically different $p < .05$.

There is not a statistical difference in the means of the three groups at the end of the first semester. The slightly higher score of the materials only group prompted us to look closely at the program being used prior to the SRI study to see whether we could credit any of their success to our SRI workshop materials.

The second procedure was to examine pretest observations collected in September prior to the workshop interventions. The data indicated that the materials-only group was already implementing 13 out of 16 summary variables* (see Table 30). In the winter observation 14 out of the 16 variables were being implemented as recommended. Thus, we cannot claim that improvement occurred as a result of using the SRI materials.

The reading program the materials only group of teachers were using is very structured and prescribes how the teachers should interact with students. This program is described in detail in the previous section of this report. The SRI variables that were not implemented related to control of student social comments (F56, F96) and more instruction to groups (S120). This district was an unfortunate choice for a comparison to see whether the SRI workshop materials might have an effect since the materials being used prior to our study were similar in intent toward organizing the classroom and for analyzing instructional interactions.

In the fall prior to the workshops, the 16 teachers in the treatment group were on the average implementing 13 out of 16 of the summary variables. As shown in Table 30, by the winter observation they had increased the number of questions and responses (F17, F25) regarding reading from a low of 61 up to the mean of 76. This stayed above the mean as recommended. Social interactions and students uninvolved (S12, S13) stayed below the mean. The teachers worked a little less often with individuals (S119) and a little more often with groups (S120). Overall the number of variables that were implemented increased by one as the pattern changed.

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*To make summarizing easier, eight variables were combined and six variables of lesser importance were dropped because of low frequency.

Table 30

COMPARISON OF TREATMENT AND CONTROL GROUP MEANS
ON FALL/WINTER PROCESS VARIABLES

Variable Number/Name	Spring Grand Mean	N=16 Teacher-Led Workshops Fall $\bar{X}$	*	S.D.	Winter $\bar{X}$	*	S.D.	N=17 SRI-Led Workshops Fall $\bar{X}$	*	S.D.	Winter $\bar{X}$	*	S.D.	N=5 Materials Only Fall $\bar{X}$	*	S.D.	Winter $\bar{X}$	*	S.D.
Interactive Instruction																			
F17 Teacher questions F25 Student responses	59.9	61.5	+	-	76.1	+	-	73.3	+	-	83.3	+	-	105.5	+	-	93.7	+	-
F71 Teacher praise/support	12.9	17.1	+	10.1	17.1	+	7.1	13.6	+	8.2	18.4	+	10.0	16.7	+	5.9	29.8	+	2.6
F76 Corrective Feedback	12.7	14.0	+	9.3	15.1	+	9.8	8.6	0	7.1	9.6	0	5.1	16.6	+	15.1	24.6	+	16.4
F136 Adult begins interaction with different student	21.9	33.2	+	11.9	24.9	+	10.3	16.4	0	10.6	29.5	+	8.5	25.8	+	5.9	22.7	+	17.4
F43 Student reading aloud	17.3	21.4	+	29.7	35.6	+	29.5	15.2	0	22.7	23.6	+	26.3	17.7	+	24.6	15.7	0	25.3
S4 Reading aloud activity	5.8	18.5	0	20.4	6.5	+	7.2	14.6	+	17.9	11.3	+	14.1	20.9	+	19.0	6.0	+	11.2
F94 All interactive reading	202.1	245.0	+	48.0	252.5	+	44.7	235.5	+	43.0	256.8	+	47.4	255.2	+	48.0	282.7	+	27.9
Non-interactive Instruction																			
S2 Teacher without students; classroom management	27.8	16.9	+	10.0	13.8	+	8.2	24.6	+	20.0	20.4	+	17.6	10.0	+	3.7	8.0	+	11.0
F122 Teacher without students	41.0	24.0	+	10.3	26.7	+	22.2	44.5	0	41.6	39.2	+	46.7	26.9	+	18.7	21.8	+	24.5
S3 Silent reading	13.8	8.8	+	15.6	11.8	+	11.2	3.4	+	4.8	7.1	+	7.9	4.9	+	5.8	8.0	+	12.9
S9 Written assignment	20.9	10.5	+	14.9	22.7	0	12.3	19.1	+	20.7	33.4	0	18.8	9.6	+	15.7	20.4	+	19.2
Off-task Interactions																			
F56 Social Comments F96 Behavior	13.7	13.9	0	-	9.7	+	-	10.8	+	-	8.0	+	-	19.3	0	-	7.1	0	-
S12 Social interaction S13 Student uninvolved	11.4	7.5	+	-	9.4	+	-	10.0	+	-	10.8	+	-	18.4	0	-	10.7	+	-
Organization and Grouping																			
F120 All interaction; class assignment	61.9	61.8	+	23.2	63.0	0	25.9	81.3	0	55.3	79.6	0	53.3	52.5	+	27.7	57.5	+	35.2
S119 Teacher - single student	25.0	9.8	+	7.5	8.9	+	10.4	7.6	+	9.4	20.0	+	18.3	25.4	0	21.0	5.3	+	3.5
F48 Teacher instructs groups	4.4	3.8	0	6.5	5.3	+	6.7	4.6	+	6.4	12.6	+	12.4	11.2	+	11.9	1.7	0	2.7

* + = Teachers performed as recommended in relationship to grand mean.
0 = Teacher did not perform as recommended.

The 17 control teachers in the SRI-led workshops were on the average implementing eleven of the 16 summary variables when they were observed in the fall. By the winter observation they were implementing 13 of the variables. These teachers increased the amount of questioning, and students' responding (F17, F25), and giving support or praise (F71) although they also increased working with groups (S120) and decreased the amount of time they spent without students (S2, F122).

The standard deviations within each group of teachers are substantial so that the following questions become of interest: Were some sites better implemented than others? Were demographic characteristics within a site related to high or low implementation by teachers? The following section will examine these relationships.

Implementation Scores of Treatment and Control Groups by Districts

Mean implementation scores were computed for each district based upon the winter observations of teachers within the district. Each teacher was given a point for each of the 26 process variables for which they were above or below the grand mean as recommended. If all variables were implemented, the score would be 26.

The sites varied within the treatment and control groups as shown in Table 31.

The districts within the treatment group implemented the program at about the same level. Monterey, with the highest score, also had the greatest range in scores. The control group had the best implemented district in the study (Downey) and the least well implemented district (Milpitas II). The materials-only group was implemented about average for the districts. The range in teachers' scores is the least for all groups in the study in the materials only group.

Implementation Scores of Teachers Within Districts

The range of teachers' implementation scores within districts is of considerable interest. There is a low score of 8 and a high score of 21 within one site. To see whether there are some demographic

Treatment and Control Groups

Of the ten interactive instruction variables, six were implemented above 70% by the trained group of teachers. Those variables that were not implemented were reading aloud (F43, S4), corrective feedback (F76), and instruction activities (S6, S7, S8). The pattern was similar for the materials-only group.

Of the four non-interactive instruction variables, three were implemented above 70% by teachers who received the SRI training program. The training here seems to have been effective. Only written assignments (S9) was not implemented; this occurred with greater frequency than we recommended in 22 classrooms. The materials-only group implemented only one of this set of variables over 70%.

All four of the off-task variables were implemented by the teachers who received training. Decreasing off-task behavior was stressed in the training program and many methods to motivate students were suggested. The materials-only group implemented two of these four variables. Their reading program does not tend to stress these particular strategies for controlling behavior and keeping students on task.

The organization and grouping variables were not well implemented by either the trained teachers or the materials-only group. The teachers in the trained group did reduce their time in making assignments (S5) and in speaking to individuals (S119). The materials-only group also spent less time organizing (F120).

In summary, it seems that it was difficult to change teachers' behavior so that they would group students and have them read aloud. It was easier to have teachers increase their questioning and praise and support. They did increase their interactions with students and decreased the non-interactive instruction and off-task activities.

Appendix E

MEANS OF PHASE I AND PHASE II OBSERVATION VARIABLES

		Spring Phase I (N=43)		Spring Phase II (N=44)		Grand Mean (N=87)
		$\bar{X}$	Σ	$\bar{X}$	Σ	$\bar{X}$
F43	Student reading aloud	19.89	855.27	14.79	650.76	17.31
S4	Total for activity: reading aloud	8.07	347.01	3.62	159.28	5.82
S3	Total for activity: reading silently	12.34	530.62	15.20	668.80	13.79
S9	Total for activity: written assignments	21.13	908.59	20.72	911.68	20.92
S2	Teacher without students in classroom management	35.33	1519.19	20.45	899.80	27.80
F45	All adult instruction, reading	56.26	2419.18	52.30	2301.20	54.26
F17	Adult commands, requests, and direct questions to students, reading	33.00	1419.00	29.15	1282.60	31.05
F25	Student responses to an adult, reading	30.22	1299.46	27.46	1208.24	28.82
F71	Adult praise and support, task or reading	12.06	518.58	13.65	600.60	12.86
F76	All adult corrective feedback, task or reading	12.72	546.96	12.74	560.56	12.73
F110	Student does not know answer; adult gives student corrective feedback by probing	.36	15.48	.46	20.24	.41
F136	Adult begins interaction with a different student	21.21	912.03	22.58	993.52	21.90
S10	Total for activity: taking test, quiz	.92	39.56	1.50	66.00	1.21
F56	All social comments	5.52	237.36	5.15	226.60	5.33
F96	All classroom interactions, behavior	10.21	439.03	6.59	289.96	8.38
S2,15	Teacher without students in classroom management	35.30	1517.90	25.00	1100.00	30.09
S12	Total for activity: social interaction	6.76	290.68	4.57	201.08	5.65
S13	Total for activity: student uninvolved	4.57	196.51	6.86	301.84	5.73
S5	Total for activity: making assignments	4.01	172.43	5.00	220.00	4.51
F120	All interactions regarding classroom assignments	56.67	2436.81	66.91	2944.04	61.85

Table F-1

PHASE II AND PHASE III WINTER MEANS COMPARED WITH GRAND MEAN

			Winter Phase II $\bar{X}$ (N=44)		Winter Phase III $\bar{X}$ (N=33)	Spring* Grand Mean $\bar{X}$ (N=87)
Interactive Instruction						
F17	Teacher questions		+	62.5	+ 79.8	59.9
F25	Student response: reading					
F71	Praise/support: reading or task		0	13.8	+ 17.8	12.9
F76	Corrective feedback: reading		0	11.4	+ 12.3	12.7
F136	Teacher interacts: different student		0	20.9	0 27.3	21.9
F43	Students reading aloud		0	13.8	+ 29.4	17.3
S4	Reading aloud activity		0	3.3	+ 9.0	5.8
F94	All interactions: reading		+	208.4	+ 254.7	202.1
Non-Interactive Instrument						
S2	Teacher without students: classroom management		+	24.9	+ 17.2	27.8
F122	Teacher without students		+	29.9	+ 33.1	41.0
S3	Silent reading		0	12.6	+ 9.4	13.8
S9	Written assignment		0	24.9	0 28.2	20.9
Off-Task Activities						
F56	Social comments		+	8.8	+ 8.8	13.7
F96	Behavior					
S12	Social interaction		+	5.0	+ 10.1	11.4
S13	Student uninvolved					
Organization and Grouping						
F120	Interactions: assignments and organization		+	65.6	0 71.6	61.9
S2,S15	Total class management		+	28.3	+ 18.3	30.1
F48	Teacher instructs group		+	6.2	+ 8.1	4.4

S = Snapshot variables--percentage of time observed.
F = Five minute interaction variables--frequency out of 300 interactions.
\+ = Higher than grand mean.
0 = Lower than grand mean.
* Spring Grand Mean, Phase I and Phase II.